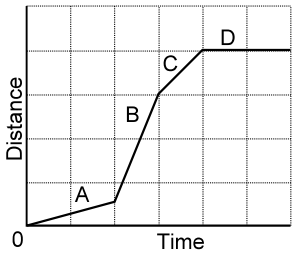
PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

1. Particle X moves with a velocity of 15 m/s[R]. Particle Y moves with a velocity of 5.0 m/s[L]. What is the velocity of particle X with reference to particle Y?
   (a) 10 m/s[L] (b) 10 m/s[R]
   (c) 20 m/s[L] (d) 20 m/s[R]

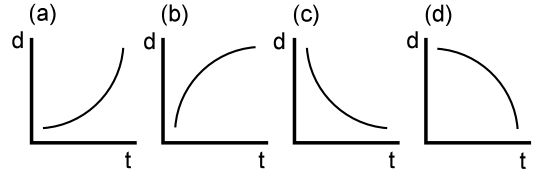
2. According to the graph given to the right, the order of the speeds from <u>slowest to fastest</u> is:
   (a) A, B, C, D
   (b) B, C, A, D
   (c) C, B, A, D
   (d) D, A, C, B



3. Velocity can be obtained from:
   (a) the slope of an velocity-time graph.
   (b) the slope of a position-time graph.
   (c) the area under an velocity-time graph.
   (d) the area under a position-time graph.

4. Acceleration can be obtained from:
   (a) the area under an acceleration-time graph.
   (b) the area under a velocity-time graph.
   (c) the slope of an acceleration-time graph.
   (d) the slope of a velocity-time graph.

Use the graphs below to answer questions 5, 6 and 7.

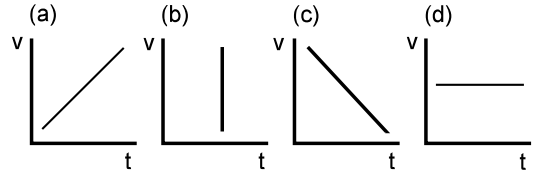


5. Which graph shows an object speeding up as it moves away from home?

6. Which graph shows an object slowing down as it moves away from home?

7. Which graph shows an object slowing down as it moves back toward home?

Use the graphs below to answer questions 8, 9 and 10.



8. Which graph represents the motion of an object <u>increasing</u> in velocity?

9. Which graph represents the motion of an object <u>decreasing</u> in velocity?

10. Which graph represents an impossible situation?

PART B: MATCH (5 MARKS)

Match the definition from the 1st column to the best term in the 2nd column and place the matching letter in the appropriate space on your answer sheet.

1. Change of position divided by the time interval for that change.
2. The area under this graph is used to construct the corresponding position-time graph.
3. Speed at a specific instant of time.
4. The slope of this graph is used to construct the corresponding velocity-time graph.
5. Acceleration that causes an object to slow down.

A) acceleration
B) acceleration-time graph
C) average speed
D) average velocity
E) deceleration
F) instantaneous speed
G) instantaneous velocity
H) position-time graph
I) velocity-time graph

SPH3U-2 FORCES & MOTION: CHAPTER 1 (PART 2) QUIZ#2

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10

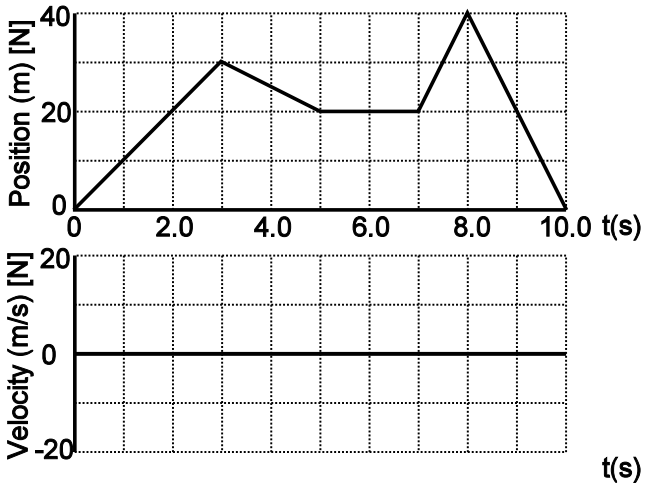
PART B: MATCH (5 MARKS)

1	2	3	4	5

PART C: SHORT ANSWER (20 MARKS)

Answer the following questions in the space provided.

1. An object moves as shown on the d-t graph.



{5} (a) Sketch the graph of velocity vs time.

{5} (b) Determine the object's:

① position at 7.0 s _____ m[N]

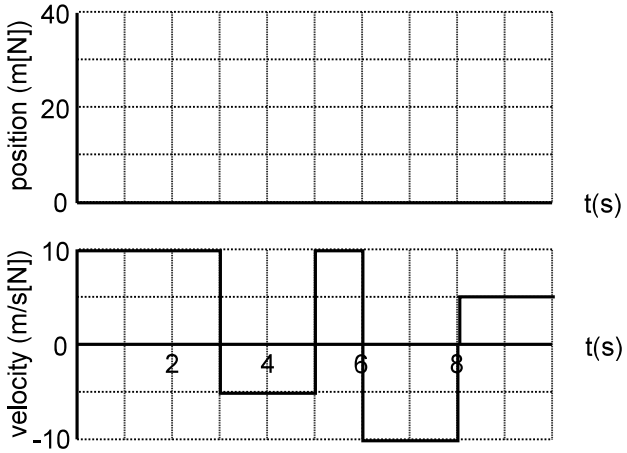
② total distance _____ m

③ total displacement _____ m[N]

④ average speed for entire trip _____ m/s

⑤ average velocity for entire trip _____ m/s[N]

2. An object moves as shown on the v-t graph.



{5} (a) Sketch the graph of position vs time.

{5} (b) Determine the object's:

① velocity at 7.0 s _____ m/s[N]

② total distance _____ m

③ total displacement _____ m[N]

④ average speed for entire trip _____ m/s

⑤ average velocity for entire trip _____ m/s[N]

PART D: PROBLEMS (15 MARKS)

Answer the following questions on a separate sheet of paper. You may use the back of this sheet if you wish.

{4} 1. A snowboarder starting from rest accelerates uniformly downhill at 2.7 m/s^2[fwd]. How long will it take the boarder to reach a point 95 m[fwd] from the starting position?

2. A plane travelling at 63 m/s[S] down a runway begins accelerating uniformly at 2.8 m/s^2[S].

{4} (a) What is the plane's velocity after 4.0 s?

{3} (b) How far has it travelled during this 4.0 s interval?

{4} 3. A flying saucer moving initially at 20 m/s[E] accelerates to 50 m/s[W] in 3.8 s. Find the saucer's average acceleration during the time interval. {Recall: $\vec{a} = \frac{\Delta \vec{v}}{\Delta t}$ and $\Delta \vec{v} = \vec{v}_2 - \vec{v}_1$}